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ABSTRACT

Cost-benefit studies of the Early Intervention Research Institute at Utah State University are summarized. No differences were found in educational effectiveness between half- and full-day programs, with the costs of half-day programs being about 75-85% of full-day programs. No significant differences were found between groups served by professionals or paraprofessionals on posttests of Intelligence Quotient, fine motor skills, gross motor skills, receptive language, and expressive language, with mean costs per child slightly less for the paraprofessional treatment group. Comparison of parent-and clinic-delivered intervention for speech and language problems found a greater mean change in language scores and greater economic efficiency for the parent-delivered intervention. Evaluation of the Abecedarian Program indicated that it is a sound economic investment with benefits including child care, reduced cost of special education and/or grade retention, earnings increase, and welfare and crime cost reduction. Recommendations concerning the design of economic studies of early intervention include additional studies of children's age at start of intervention, use of sound methods such as quasi-experimental and experimental designs, use of statistical procedures that increase the interpretability of quasi-experimental designs, use of large sample sizes, and more collection of longitudinal data. (DB)

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ERIC CLEARINGHOUSE ON HANDICAPPED AND GIFTED CHILDREN

ERIC/OSEP SPECIAL PROJECT ON INTERAGENCY INFORMATION DISSEMINATION

RESEARCH & RESOURCES ON SPECIAL EDUCATION

ABSTRACT 25
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COST EFFICIENCY OF EARLY EDUCATION

Millions of dollars have been spent on the development, implementation, and evaluation of early intervention programs in the expectation that they will provide a foundation for children's later learning. However, research on the characteristics that lead to student success and reduced program costs has often produced a confusing picture of how programs should be designed.

The Early Intervention Research Institute (EIRI) at Utah State University conducted 14 studies over a 5-year period to address such questions. In addition to cost-benefit studies, the institute synthesized previous early intervention research, studied the effectiveness of specific programs, and investigated the effects of early education programs on students with specific handicapping conditions.

This abstract will describe the EIRI cost-benefit studies. Four assessments of the cost-effectiveness of various aspects of early intervention programs were conducted. Topics addressed include half- vs. full-day programs, paraprofessionals vs. professionals as intervenors, parents as intervenors for children with language handicaps, and a cost-benefit evaluation of a specific program, the Abecedarian Program. A literature review produced recommendations for future research.

HALF-DAY VERSUS FULL-DAY PROGRAMS

The EIRI used local data to evaluate the cost effectiveness of 9 half-day and 9 full-day preschool special education programs. A matched sample of 78 4-year-olds (39 from each type of program) was used. Tests of cognitive, language, motor, social, and self-help skills were administered at the beginning and end of the school year.

Cost data were collected from three sources: (a) records of how personnel time was spent; (b) interviews of school district personnel to obtain cost data for personnel, equipment, facilities, and transportation (budget documents were often provided); and (c) parents' time spent in program-related activities. For analysis, costs were categorized as personnel, nonpersonnel, and donations (resources used but not purchased by the programs such as classroom volunteers and parents' contributions of time and materials).

The study found no differences in educational effectiveness between half- and full-day programs. Overall, the costs of half-day programs are about 75–85% of the full-day programs. Although these results are of limited interest beyond the school districts studied, the model used may be of more general interest.

PROFESSIONALS VS. PARAPROFESSIONALS AS INTERVENORS

EIRI evaluated the relative cost-effectiveness of paraprofessionals vs. professionals in early intervention and field-tested a data collection system for recording and summarizing detailed cost information. Subjects were 46 moderately or severely handicapped preschoolers, matched according to severity and type of handicap and chronological age, then randomly assigned to the professional or paraprofessional intervention group.

Three categories of cost data were collected: personnel costs, nonpersonnel costs, and contributed resources. Staff tracked their time daily according to 15 activity categories. They recorded the type of activity and the children and time involved. A computer analysis produced weekly tables of cost and time data for each student per activity by intervenor. Program records and parent interviews were used to collect demographic information.

The study found no significant differences between the professional and paraprofessional groups in posttests of IQ, fine motor, gross motor, receptive language, and expressive language. Mean costs per child were slightly less for the paraprofessional treatment group. The analyses indicate that overall, paraprofessionals have the potential to provide a high-quality service at a reduced price.

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PARENTS AS INTERVENORS FOR CHILDREN WITH LANGUAGE HANDICAPS

This study tested the idea that providing speech and language therapy through parents is an effective and cost-efficient strategy. Communication disorders are among the most common handicap affecting children who receive special education services, and early intervention appears to be especially effective in remediating them.

Three alternative 13-week intervention programs were compared to a no-treatment condition. All subjects were preschool children with mild to moderate handicaps; Group 1 (10 children) attended a clinic 2½ hours a day, 4 days a week; Group 2 (10 children) received therapy at home from their parents; Group 3 (10 children) received both treatments. The remaining 10 children received no treatment until the following semester. All children were pre- and posttested using a measure of auditory and verbal ability, and a measure of articulation.

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Group 2 and 3 parents attended four 2½-hour training sessions in the first 3 weeks with five additional sessions during the treatment period. The sessions taught parents to provide a more stimulating home environment and to incorporate simple therapy techniques into ordinary activities.

The costs of each treatment alternative were estimated using an ingredients approach, which identifies all resources used in each alternative. These included professional staff, materials and supplies, children's initial evaluations, transportation, capital equipment, and facilities for all treatments. The home-based intervention also included parents' time at home to deliver intervention.

Mean change in language scores from pre- to posttesting was greater for the parent-delivered intervention. The parent intervention was also more economically efficient.

COST-BENEFIT ANALYSIS OF THE ABECEDARIAN PROGRAM

This new program was subjected to cost-benefit analysis from its inception. Resources used by the program, including professional staff, volunteers, and other nonpersonnel resources (facilities, equipment, materials, etc.) were valued in each of 5 years. Costs were estimated in three ways: actual resource use and cost as reported by the program; estimated cost of providing the same model in the public school system; and an estimate of private preschool costs. All costs were adjusted for inflation and reported in 1986 dollars.

Estimates of facility costs were based on the average cost of facilities in daycare programs nationally. Public school system estimates were based on National Education Association estimates of teacher salaries, and estimates for other personnel and nonpersonnel resources were obtained from a book called *The Cost of Special Education*. Private daycare costs were estimated from the National Daycare Study, a public policy survey, and the Child Care Information Exchange Center Directors Survey.

The program enrolled 14 newborns in Year 1. Salaried personnel included 1 full-time supervisor, 3 full-time "cottage parents," 1 part-time substitute, and 2 part-time volunteers. Consultants provided inservice and preservice training. Total cost per child was $7,433. The estimate for providing the program in a public school system was $7,719, and in a private setting, $5,200.

In Year 2, half of the expenditures were for nursery and half for preschool because the children entered preschool in the middle of the year. Total costs were $7,802 in the university-run program, estimated at $9,090 for public school, and $5,075 in a private program. In Years 3–5 preschool costs per child were $7,943. Estimates for public school were $9,545, and private program, $5,036.

Benefits include child care, reduced cost of special education and/or grade retention, earnings increase, and welfare and crime cost reduction. The study concluded that the Abecedarian Program is a sound economic investment when replicated in a private daycare setting if a discount rate of 0–5% is assumed, and in a public school setting or university if a discount rate of 0–3% is assumed.

RECOMMENDATIONS FOR FUTURE RESEARCH

The EIRI also conducted a literature review of 16 articles, which produced recommendations regarding the design of economic studies of early intevention:

- Additional studies of age at start of intervention are needed.
- Sound methods, such as the more easily interpreted quasi-experimental or experimental designs, should be emphasized.
- Recently developed statistical procedures that increase the interpretability of quasi-experimental designs will aid research in this area.
- Large sample sizes are desirable.
- More collection of longitudinal data is needed.

The authors urge researchers to adopt accepted procedures for economic analysis. Cost estimates should be at least approximately complete and include all personnel and capital such as facilities. Costs and benefits should be discounted when costs are incurred at different times or when longitudinal data on benefits are involved.

Research on the economics of early intervention is a new endeavor in a field that is still young and rapidly developing. Along with many other areas of early intervention research, it faces substantial theoretical and practical problems. EIRI researchers hope that the promise of economic evaluation will spur other researchers to apply this approach.

Final Report, Early Intervention Research Institute. Glendon Casto and Karl R. White, Co-Directors, Developmental Center for Handicapped Persons at Utah State University. 345 pp. U.S. Department of Education grant. October 1, 1987. Available for $.85 (microfiche) or $30.00 (hard copy), plus postage, from ERIC Document Reproduction Service, 3900 Wheeler Avenue, Alexandria, VA 22304 (1-800-227-3742). Order number is ED 293 492.

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